OUTBACK MARINE
AUSTRALIA PTY LTD

Smart System Solutions

Electronics for Yachts and Boats

October 2002 (Rev E)

Instruments
Radar
Sonar
GPS

Auto Pilots
Chart Plotters
HF Radios
VHF Radios

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ELECTRONICS

VESSEL INSTRUMENTS

ST60 SERIES INSTRUMENTS

ST60 System Overview

ST60 offers everything from stand-alone display units to sophisticated, fully-integrated systems with intelligent repeaters, remote controls and flexible mounting options. Significantly enhanced displays ensure superior viewing angles for both day and night conditions. Simple, push-button controls make ST60 instruments extremely easy to use.

The Raymarine Seatalk system provides flexibility of connection not only to ST60 instruments but the whole range of Autopilots, Radar, Chart Plotters and Sonar systems. The ST60 system is extremely stable – all that was learnt on the ST50 system has been incorporated to offer the highest level of reliability with enhanced functionality.

ST60 Speed

Speed System: with valox plastic through hull transducer.

Speed Display: for use with optional transducers or as a repeater

- Adjustable display response
- Autopilot status indication
- Speed: 0 – 60 knots (kts, mph or kph)
- Maximum/average speed
- Cumulative Log: 0 – 99,999nm
- Resettable trip: 0 – 999nm
- 1/100 knot resolution
- Sea temperature
- Stopwatch/lap time
- 10 and 5 minute race start timer
- VMG (Velocity Made Good)
- SOG (requires data on SeaTalk)
- Autopilot status indicator
- Speed Calibration via GPS SOG (Speed over Ground), GPS device required

Part #	Description
RAY#A22009	System
RAY#A22001	Display Only

Speed System with transducer

ST60 Depth

Depth System: with valox plastic through hull transducer.

Depth Display: for use with optional transducers or as a repeater

- Depth performance: 2.6' – 600' (0.8 – 180 m)
- Maximum and minimum depth display
- Depth trend indicator
- Adjustable display response
- Transducer keel or waterline offset
- Autopilot status indication

Part #	Description
RAY#A22010	System
RAY#A22002	Display Only

Depth System with transducer

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ST60 SERIES INSTRUMENTS

ST60 Tridata

Tridata System: Combines depth, speed and temperature with valox plastic through hull transducers.

Tridata Display: for use with optional transducers.

- Speed + Depth + Temperature
- Depth performance: 2.6' – 600' (0.8 – 180 m); maximum and minimum depth display; depth trend indicator
- Adjustable display response
- Transducer keel or waterline offset
- Autopilot status indication
- Speed: 0 – 60 knots (kts, mph or kph); maximum/average speed; cumulative Log: 0 – 99,999nm; resettable trip: 0 – 999nm; 1/100 knot resolution
- Stopwatch/lap time; 10 and 5 minute race start timer
- VMG (Velocity Made Good); SOG (requires data on SeaTalk)
- Autopilot status indicator
- Speed Calibration via SOG (Speed over Ground) - GPS Input required

Part #	Description
RAY#A22013	System
RAY#A22004	Display Only

Tridata System with speed and depth transducers

ST60 Wind

- ST60 Wind Display only. For use as a repeater or with an existing ST50 or ST60 wind transducer
- Apparent wind speed and direction
- True wind speed and direction (relative)
- Maximum wind speed; maximum wind speed alarm
- Beaufort scale
- Adjustable display and pointer response
- Heading on opposite tack
- Keypad transducer alignment

Short Arm Wind Transducer

- Supplied with 30m (97.5') of cable. Standard with A22012 ST60 Wind System

Optional Long Arm Wind Transducer

- Model number E25109 Supplied with 30m (97.5') of cable. Combine with ST60 Wind Display only model number A22005 to build a complete system

Rotavecta Wind Transducer

- Supplied with 20m (65') of cable. Standard with A22011 ST60 Wind System

Part #	Description
RAY#A22012	Vane System
RAY#A22005	Display Only
RAY#A22006	Close Hauled

Wind System with transducer

Close hauled wind display

ST60 Compass

Compass Display: for use as repeater for ST60 systems or SeaTalk compatible autopilots.

Compass System: complete with remote fluxgate compass sensor

- Heading Display
- COG (requires GPS data to be on SeaTalk)
- Average course
- Man overboard display
- Patented fluxgate transducer
- Automatic linearisation
- Adjustable display and pointer response
- Keypad heading alignment

Part #	Description
RAY#A22014	System
RAY#A22007	Display Only

Compass Display

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ST60 SERIES INSTRUMENTS

ST60 Multi
Multi function repeater with user programmable displays and NMEA in/out

Part # RAY#A22003
Description Repeater

- Data Display organized with intuitive programmable pages and chapters
- Boat speed: current, maximum and average; SOG and VMG; Log: 0 – 99,999nm, trip: 0 – 999.99nm
- Depth: current, minimum and maximum
- True wind bearing; apparent wind speed & direction (relative); true wind speed and direction (relative); beaufort scale and cardinal point
- Heading and locked heading; Lat/Lon; cross track error and error steer bar; COG, CMG and DMG (resettable); bearing to waypoint/distance to waypoint; Target waypoint name and number
- Sea temperature
- GPS Satellite Status
- Rudder angle; autopilot status indicator
- Battery voltage/battery voltage alarm
- Display and cancel SeaTalk alarms; optional extra-loud external alarm
- NMEA input and output
- Repeater operation only

Multi repeater

ST60 Maxiview
Maxiview Large Screen dedicated repeater display with handheld remote capability

Part # RAY#A22036
RAY#A25006
Description Repeater
Remote

- 1.6" (41.2mm) digits
- Water depth; deep and shallow alarms
- VMG (0.01 knot resolution); VMG over ground and to waypoint
- Sea temperature (0.1° resolution)
- Apparent wind direction; True and apparent wind speed; beaufort scale
- Current and average boat speed; trip log (99,999nm maximum)
- Heading on next tack
- SOG and COG; bearing and distance to waypoint; cross track error; Lat/Lon (current position); ETA at waypoint; current/locked magnetic heading
- Time and date (if available)
- Tidal vector

Maxiview Repeater

ST60 Maxiview Remote
4 button wired SeaTalk remote for control of ST60 Maxiview displays

- Remote control can be dedicated to a particular MaxiView instrument
- Can cycle up to 4 MaxiViews through a predefined series of displays
- Supplied with deck socket and plug. Additional deck sockets may added

Maxiview Remote

ST60 Rudder
Rudder Display: SeaTalk repeater for use with the ST60 Rudder system or any SeaTalk compatible autopilot equipped with a rudder reference transducer

Part # RAY#A22015
RAY#A22008
Description System
Display

Rudder Indicator System: Complete with rotary rudder reference transducer.

- Keypad transducer alignment
- Analogue display of rudder angle

Rudder Indicator

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ST290 SERIES INSTRUMENTS

ST290 Overview

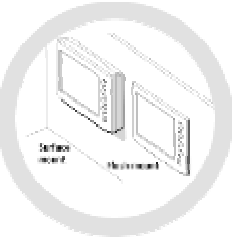
ST290 – the revolutionary new instrument system that combines big, bold, user-friendly displays with intelligent transducers and SeaTalk2 networking technology. ST290 redefines the way onboard information is viewed, and sets new standards for integrated instruments.

Each ST290 component is engineered for simplicity and ease of use. Stylish remote keypads put the power of ST290 within easy reach and give you full control over single or multiple displays from a distance. Flush mount displays and controls can be built into the dash or bulkhead. A surface mount option is also available

Digital and Analogue Displays

Performance and Technology

More than just an instrument system, ST290 combines autopilot, navigation, heading and environmental data with depth, speed and wind to create a comprehensive network with data rates 20 times faster than competitive instrument systems. Demanding skippers will appreciate ST290's bold, bright displays and intelligent transducers that deliver fast and accurate information. ST290's easy yet advanced calibration techniques and the RayTech Sail Racer interface give racing crews the performance advantage they need to win.

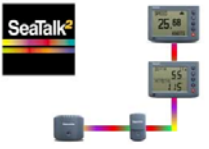


Mounting Options

Redefining instrument networking: SeaTalk2

ST290 takes the next step into the future with SeaTalk2, a new super-fast communication bus that carries data up to 20 times faster than other systems, giving

- Proven CAN based protocol
- Fast data rate – high data capacity, low saturation for added reliability
- Single cable, tough moulded plug for solid, reliable connections
- Easy, reliable spade terminals with protective boot for made up connections
- NMEA 2000 ready – for future expansion and system integration



SeaTalk2 Communications

SeaTalk and SeaTalk2 compatibility?

Engineered to support future expansion and interface capabilities SeaTalk2 is the logical evolution of our world-renowned SeaTalk communication protocol. With faster data rates and increased capacity SeaTalk2 sets the stage for future on board networks. Not to worry, ST290 is compatible with the original SeaTalk data format for seamless integration into Raymarine radars, chartplotters, autopilots and fishfinders.

In addition, ST290 is NMEA 0183 compatible and is NMEA 2000 ready* for total on board connectivity.

5-pin SeaTalk 2 Connector

ST290 System Starter Pack

Each ST290 system starts with an ST290 Starter Pack consisting of one Graphic display, DPU (data processing unit), Speed and Depth Pods. The Starter Pack is the core building block of every ST290 system. With the Starter Pack in place, choose additional ST290 Graphic, Data and Analog displays to create your system. Add keypads for remote control, autopilot integration and Man Overboard (MOB). Add wind data via the ST290 active wind transducer (with pod) and then choose appropriate speed and depth transducers for connection to the speed and depth pods.

Part #	Description
RAY#T22071	Starter Pack

ST290 Graphic display, DPU (data processing unit), Speed and Depth Pod.

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ST290 SERIES INSTRUMENTS

ST290 Data Processing Unit (DPU)

Essential to every ST290 system, the powerful DPU (Digital Processing Unit) delivers advanced and rapid data calculations and serves as an easy connection point for SeaTalk, SeaTalk2 and DC power. The DPU also provides the ST290 network with communication points for NMEA 0183, NMEA 2000 plus an audible external alarm.

- 10-16 volts operation
- Supplied with SeaTalk2, SeaTalk and DC power cables
- NMEA 2000, NMEA input (0183) and NMEA output (0183)
- SeaTalk and SeaTalk2 ports
- Drip resistant

Part # RAY#E22005 **Description** DPU

ST290 Graphic Display

The most versatile instrument displays available today, the ST290 Graphic display provides complete control and display of every available information source. The large dot matrix LCD provides maximum visibility from every angle and features easy-to-read characters with intuitive icons and graphics. Simple 'chapter and page' control keys give quick and easy access to graphs, diagrams or numeric displays, in giant or multi-line formats. A convenient favorites chapter allows for total customization of each Graphic instrument

- More than just an instrument repeater. ST290 graphic intelligently integrates multiple data sources into a completely configurable and easy-to-use display
- High contrast 5.5" dot matrix display
- Crisp, sharp display with wide viewing angle
- Digits to 48mm (2")
- Animated diagrams and graphs
- Split screen format with 2 or 4 data fields
- Easy, menu driven operation and set up
- Convenient sail and power operating profiles for quick start up or total chapter and page customization is available
- Each ST290 Graphic display in a system can be independently customized for even greater system flexibility.
- Quick and easy access to any data
- Versatile "Favorites" chapter for user-defined custom pages and displaying RayTech generated data
- Remote keypad control option
- Full Function autopilot display and control with the addition of a ST290 Pilot keypad and connection to an Autohelm Series corepack and drive unit
- Advanced transducer calibration
- Low power indicator
- Adjustable display response time
- SeaTalk2 networking for easy connection of high speed data and power
- With SeaTalk2 you can add multiple ST290 displays via a single wire "daisy chain" connection
- Intuitive data graph displays

Part # RAY#E22057 **Description** Graphic Display

5.5" (140mm) High resolution dot matrix display. A core component of every ST290 system

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ST290 SERIES INSTRUMENTS

ST290 Data Display

A bold clear information display, the ST290 Data provides concise uncluttered access to the most important onboard data in one of largest dual line displays available today. The ideal repeater solution, the ST290 Data features the same intelligent rotating favourites display as the Graphic. Chapter and page keys provide access to all information across the ST290 network.

- 2 lines of clear, easy to read digital data
- Large 25mm (1") digits
- High contrast 5.5" LCD
- Convenient sail and power operating profiles for quick start up or total chapter and page customization is available
- Each ST290 Data display in a system can be independently customized for even greater system flexibility.
- Quick and easy access to any data
- Versatile "Favourites" chapter for user-defined custom pages and displaying RayTech generated data
- Remote keypad control option
- Autopilot display and control with the addition of a ST290 Pilot keypad
- Advanced transducer calibration
- Low power indicator
- Adjustable display response time
- SeaTalk2 networking for easy connection of high speed data and power
- With SeaTalk2 you can add multiple ST290 displays via a single wire "daisy chain" connection

Part # RAY#E22056 **Description** Data Display

High contrast 5.5" LCD with two large 25mm (1") lines of clear, easy to read digital data

ST290 Analogue Wind Displays

The ST290 Wind and Close Hauled Wind instruments each comprise an analogue dial and integral digital display.

- True and apparent wind direction and speed. Wind speed is displayed either in knots or meters per second.
- Velocity made good (VMG), when boat-speed information is available on the system.
- Maximum wind speed
- Tack angle.

Displayed information

The information on the Wind and Close Hauled Wind instruments can be either true or apparent, depending on which mode you select at the instrument. The pointer shows the true or apparent wind direction. The scale range given by the Wind instrument is a full 360°, whereas the Close Hauled Wind instrument gives an expanded indication from-60° to +60° about the bow or stern of the boat.

Wind Display – E22059

Precise analogue wind direction combined with a digital speed display. Colour coded for easy port and starboard recognition

Close Hauled Wind Display – E22061

Close Hauled analogue wind direction combined with a digital speed display. Colour coded for easy port and starboard recognition. Provides precise wind measurements between 20° and 60°

Part # RAY#E22059 **Description** Wind Display
RAY#E22061 CloseHauled

Wind Display

Close Hauled Wind Display

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ST290 SERIES INSTRUMENTS

ST290 Compass Display
The ST290 Compass instrument consist of an analogue dial and integral digital display, which provide:

- Compass heading indication.
- Steering indication
- Course over ground (COG) information, if GPS or similar positioning data is available on the system.
- Requires separate compass transducer – usually on autopilot system

Part # RAY#E22060 **Description** Display

Compass Display

ST290 Rudder Display
Easy-to-read real time rudder display. Complements ST290 systems with integrated autopilot.

The ST290 Rudder Angle Indicator Instrument provides a real-time indication of rudder position as determined by an associated Rudder Reference Transducer or autopilot system.

The rudder position is indicated by a pointer. The instrument scale range gives an expanded indication from -40° to 40°

Part # RAY#E22062 **Description** Display

Rudder Display

ST290 Remote Keypad
Complete remote keypad access to ST290 Graphic and Data displays.

- Full Control of up to 8 different ST290 Graphic or Data displays per remote control
- Quick selection of target display
- Quick and easy retrieval of data – buttons replicate instrument buttons
- Clean, low profile installation

Part # RAY#E22063 **Description** Keypad

Remote Keypad

ST290 Pilot Keypad
Add Autohelm series pilot functionality to ST290 with this easy-to-use push button keypad. The inherent flexibility engineered into the ST290 system allows for seamless expansion into integrated Autopilot display and control. Dedicated pilot chapters on both the Graphic and Data displays provide full autopilot functionality and calibration when combined with an ST290 pilot keypad

- Slim, compact autopilot control pad
- Easy autopilot set up using ST290 Graphic display
- Autopilot information viewed on any ST290 Graphic or Data display
- Precise 1 & 10 degree course change control
- Dedicated Track/Track Advance button
- Easy return to last course following a dodge manoeuvre

Part # RAY#E12094 **Description** Keypad

Pilot Keypad

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ST290 SERIES INSTRUMENTS

ST290 Man-Overboard (MOB)
The Man-Overboard (MOB) Keypad is used if a man overboard situation occurs, to initiate an alarm and request MOB position information from the appropriate system components.

Any number of MOB Keypads can be installed, and any one can be used to initiate a MOB alarm. When a MOB alarm is initiated and an appropriate Raymarine product is connected to the ST290 system, selected instruments will display information relating to the location of the man-over-board incident.

- Low profile flush mount keypad
- Compatible with all Raymarine Raycharts and Radars
- Any number in a system

Part # RAY#E12064 **Description** MOB Keypad

MOB Keypad

ST290 Wind Transducer and Pod
ST290's intelligent transducers deliver optimum performance thanks to advanced calibration techniques and super-fast data communication. Unlike conventional systems, ST290 transducers are equipped with intelligent transducer pods that share information via SeaTalk2 with the entire ST290 system.

- High Performance carbon-fibre long arm masthead unit for improved accuracy.
- Advanced wind calibration can be carried out on RayTech Sail Racer software for ultimate performance.

Part # RAY#E22068 **Description** Transducer

Active Long Arm Wind transducer and pod

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RADAR AND RADAR/PLOTTERS

RL Series Plus Radars with HSB2
For maximum integration capabilities choose the RL Series radars. Available in 7" monochrome, 7" colour and 10.4" colour, the RL Series displays feature hsb2 networking for multi-station operation and integration with Raymarine Echo Sounders, Raycharts and RayTech Navigator software.

SL Series Plus Radars
Recommended for stand-alone systems. Includes all features of RL series except for hsb2 network interface. Available in 7" LCD colour or 7" LCD monochrome.

Model	Display	Function	Part #
RL70	7" Mono	Radar	RAY#E52031
RL70RC	7" Mono	Radar/Plotter	RAY#E52032
RL70C	7" Colour	Radar	RAY#E52033
RL70CRC	7" Colour	Radar/Plotter	RAY#E52034
RL80C	10" Colour	Radar	RAY#E52037
RL80CRC	10" Colour	Radar/Plotter	RAY#E52038
SL70	7" Mono	Radar	RAY#E52043
SL70RC	7" Mono	Radar/Plotter	RAY#E52044
SL70C	7" Colour	Radar	RAY#E52045
SL70CRC	7" Colour	Radar/Plotter	RAY#E52046

All models require a radar scanner. The Radar/Plotter models have a waterproof opening door that accepts up to two C-MAP chart cartridges.

Radar Features
- Auto GST – Automatic Control of Gain, Sea and Tune
- Intuitive User Interface – Using soft key prompts and automatic features
- Reduced Beam Widths yield better target resolution
- Context Sensitive Cursor
- Enhanced Receiver with Low Noise Figure <5db
- 2 Variable Range Markers & Electronic Bearing Lines
- Zoom Split Screen & Graphic Course Deviation Indicator
- True Motion Display
- compass input required
- Fully Waterproof to USCG CFR 46 Requirements

Plotter Features
- Seamless chart panning with lightning fast chart redraw
- SDGPS Satellite Differential GPS Compatible with the addition of the optional Raystar 120 SDGPS Antenna Sensor
- SmartRoute™ automatically builds waypoints and routes from previous tracks
- Waypoints and Routes can be stored on optional data cards
- Live cursor exchange between radar and chart
- Automatic screen synch between radar and chart
- CMAP NT cartography with port & tidal features
- Up to 1,000 Waypoints, Up to 20 routes with 50 waypoints each
- Choice of Orientation Modes Head Up, North Up (true or magnetic) & Course Up
- Intuitive Soft Key Prompts
- User configurable SeaTalk Databoxes

Interface Features
- **HSB2:** Fully independent use of remote Chart data if present on hsb2. Full remote control and display of Radar and Sonar data if present on hsb2. Up to 10 hsb2 compatible devices can be connected together (RL Series only)
- **NMEA Input:** NMEA 0183 (GLL, GGA, GLC, GTD, VTG, BWC, BWR, RMA, RMB,RMC, XTE, VHW, HDG, HDM, HDT, DBT, DPT, APB,VLW, MWV,MTW,WPL, RTE and ZDA)
- **NMEA Output:** APB, BWC, BWR, DBT, DPT,GGA, GLL, MTW, RMA, RMB, RMC, RSD,TTM, VLW, VHW, VTG, WPL, ZDA.
- **PC Compatibility:** Full integration with RayTech software and optional hsb2 PC interface card
- **SeaTalk Input:** Depth, Speed Over Ground & Course Over Ground, Position, Waypoint number, range, bearing and time to go, Speed through water, Time, Cross Track Error, Heading, Wind, Date, Log/Trip, Pilot Status, Temperature, Man Overboard, and cursor position
- **SeaTalk Output:** Cursor data, Guard zone alarm and Navigational data bridged from NMEA

Radar Scanners
Both Radome and Open Array type scanners are offered. The Radome has a full cover over the rotating antenna and is best for compact installations and for sailing vessels to prevent fouling from halyards.

For better range and higher resolution, the Open Array type antenna is pedestal mounted with a visible rotating antenna.

Type	Scanner	Max Range	Part #
Radome	2KW 18"	24NM	RAY#M92650
Radome	4KW 24"	48NM	RAY#M92652
Open Array	4KW 48"	72NM	RAY#T52001
Open Array	10KW 48"	72NM	RAY#T52012
Open Array	4KW 72"	72NM	RAY#T52013
Open Array	10KW 72"	72NM	RAY#T52014

The maximum range stated is best case. Actual range depends on scanner elevation above sea level, sea clutter and climatic conditions.

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RADAR AND RADAR/PLOTTERS

SL70 Radar & SL70RC Radar/Plotter
RL70 Plus Radar with hsb2
RL70RC Plus Radar/Plotter with HSB2

7" Monochrome LCD Display

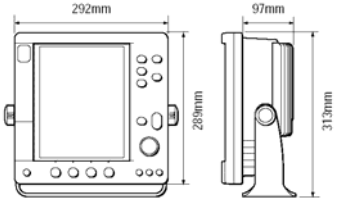
SL70C Radar & SL70CRC Radar/Plotter
RL70C Plus Radar with hsb2
RL70CRC Plus Radar/Plotter with hsb2

Daylight Viewable 7" Colour LCD Display

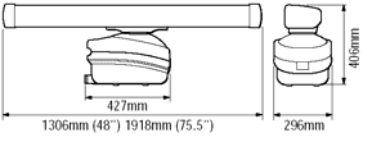
RL80C Plus Radar with hsb2
RL80CRC Plus Radar/Plotter with hsb2

Daylight Viewable 10.4" Colour LCD Display with HSB2

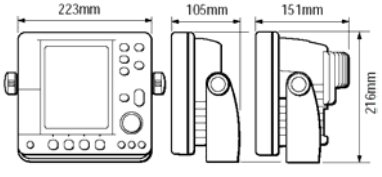
Radar/Chart Overlay



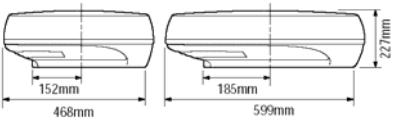
RL80 Dimensions



48" AND 72" OPEN ARRAY DIMENSIONS



RL70 and RL70C Dimensions



18" AND 24" RADOME DIMENSIONS

Radar Scanner Dimensions

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CHART PLOTTERS

RayChart Plus Systems with HSB2

Blue water voyagers or day sailors alike will be truly impressed with the top-of-the-line Raychart. Plus. The Raychart 631 Plus delivers stunning, daylight-viewable colour, full VGA LCD screen and a processor fast enough to keep up with any navigator's demands. As with all of Raymarine's Raychart products, ease-of-use and intuitive operations are built-in.

The Raychart Plus is fully hsb2 and SeaTalk compatible for stand-alone use, full dual-station, or multi-station capability. When interfaced with other Raymarine hsb2 compatible products the Raychart Plus can also display and control the radar or sonar along with its own C-MAP cartography. The Raychart Plus is a world-class navigator that will surpass all of your previous expectations of what a chart-plotter should be.

Model	Display	Part #
Raychart 520 Plus	7" Mono	RAY#E32034
Raychart 530 Plus	7" Colour	RAY#E32035
Raychart 631 Plus	10" Colour	RAY#E32036

All models have a waterproof opening door that accepts up to two C-MAP chart cartridges. A separate GPS sensor is required for position information.

Radar overlay will require connection of either a "G" series autopilot or ???

Plotter Features

- Seamless chart panning with lightning fast chart redraw
- Radar Overlay when connected via hsb2 to Pathfinder Plus Radar systems
- Sonar Integration: Display and control Fishfinder functions when connected via hsb2 to the L755, L760 or L1250
- hsb2 networking provides multi-station control and viewing anywhere onboard (up to 10 displays)
- SDGPS Satellite Differential GPS Compatible with the addition of the optional Raystar 120 SDGPS Antenna Sensor
- SmartRoute™ automatically builds waypoints and routes from previous tracks
- Flexible waypoint and route building
- Waypoints and Routes can be stored on optional data cards
- Live cursor exchange between radar and chart
- Automatic screen synch between radar and chart
- CMAP NT cartography with port & tidal features
- Up to 1,000 Waypoints, Up to 20 routes with 50 waypoints each
- Choice of Orientation Modes Head Up, North Up (true or magnetic) & Course Up
- Intuitive Soft Key Prompts
- User configurable SeaTalk Databoxes

Interface Features

- **HSB2:** Fully independent use of remote Chart data if present on hsb2. Full remote control and display of Radar and Sonar data if present on hsb2. Up to 10 hsb2 compatible devices can be connected together
- **NMEA Input:** NMEA 0183 (GLL, GGA, GLC, GTD, VTG, BWC, BWR, RMA, RMB,RMC, XTE, VHW, HDG, HDM, HDT, DBT, DPT, APB,VLW, MWV,MTW,WPL, RTE and ZDA)
- **NMEA Output:** APB, BWC, BWR, DBT, DPT,GGA, GLL, MTW, RMA, RMB, RMC, RSD,TTM, VLW, VHW, VTG, WPL, ZDA.
- **PC Compatibility:** Full integration with RayTech software and optional hsb2 PC interface card
- **SeaTalk Input:** Depth, Speed Over Ground & Course Over Ground, Position, Waypoint number, range, bearing and time to go, Speed through water, Time, Cross Track Error, Heading, Wind, Date, Log/Trip, Pilot Status, Temperature, Man Overboard, and cursor position
- **SeaTalk Output:** Cursor data, Guard zone alarm and Navigational data bridged from NMEA

GPS Sensors

Raystar 120 SDGPS Receiver Compact and accurate the Raystar 120 WAAS compatible Satellite Differential Receiver provides pinpoint accuracy to Raymarine's family of Raycharts and Raychart compatible Radars and Sounders. A self contained waterproof GPS receiver and antenna combined, the Raystar 120 delivers accuracy better then 3 meters by decoding GPS correction signals from the WAAS (Wide Area Augmentation System)

Note: WAAS system not currently available in Australia.

Model	Interface	Part #
Raystar 120	Seatalk	RAY#E32025
Raystar 120	NMEA	RAY#E32026

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CHART PLOTTERS

Raychart 520 Plus

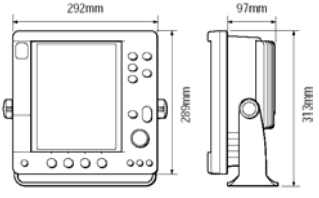
Raychart 520 Plus is a 7" Daylight viewable monochrome LCD Raychart with hsb2 networking capability

Raychart 530 Plus

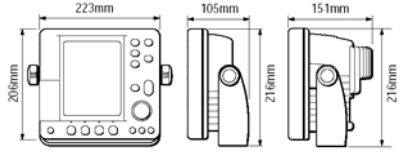
Raychart 530 Plus is a 7" Daylight Viewable Color Raychart with hsb2 networking capability

Raychart 631 Plus

Raychart 631 Plus is a 10.4" Daylight Viewable Color Raychart with hsb2 networking capability



Raychart 631 Dimensions



Raychart 520 and 530 Dimensions

Raychart 425 SDGPS Plotter
6" Satellite Differential GPS Raychart featuring Navionics cartography. Supplied complete with Raystar 120 SDGPS Receiver.

- Lightning fast chart redraw using Navionics Nav-Chart cartridges with Support for Navionics Port Services and Tides and Currents
- Chart Rotation allows for North up, Course up or Head up display
- Graphical Course deviation indicator(CDI), Bearing/distance indicator(BDI) displays, Waypoint, Navigation displays
- SmartRoute™ automatically builds waypoints and routes from previous tracks
- Support for Navionics Hot Maps with detailed North American Inland Lake chart coverage

Model	Display	Part #
Raychart 425	6" Mono	RAY#E32032

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SONAR AND SONAR/PLOTTERS

L755/760/1260 Sonars with HSB2
The L755, L760 and L1260 Plus series combine state of the art echo sounder performance with either monochrome or daylight viewable LCD color displays. They are all SeaTalk and hsb2 compatible for full dual-station functionality. Simply connect another fish-finder, chart-plotter, or radar display and you have created an on board system like no other. You will have full control of the radar, fish-finder and chart-plotter from either display.

- L755/L760 – 600-watts, 5-3000 ft.
- L1260 - 600/1000-watts, 5-5000 ft.

Model	Description	With Transducer	Part #
L755	Sonar/Plotter 7" Mono	-Display only	RAY#E63007
L755	Sonar/Plotter 7" Mono	Thru-Hull	RAY#E63008
L755	Sonar/Plotter 7" Mono	Transom	RAY#E63009
L760	Sonar/Plotter 7" Colour	Display only	RAY#E63010
L760	Sonar/Plotter 7" Colour	Transom	RAY#E63011
L760	Sonar/Plotter 7" Colour	Thru-hull	RAY#E63012
L1260	Sonar 10" Colour	Display only	RAY#E63013
L1260	Sonar/Plotter 10" Colour	Display only	RAY#E63014
L760	Sonar 7" Colour	Display only	RAY#E63019
L760	Sonar 7" Colour	Transom	RAY#E63020
L760	Sonar 7" Colour	Thru-hull	RAY#E63021

The Sonar/Plotter models have a waterproof opening door that accepts up to two C-MAP chart cartridges.

Sonar Features

- **Dual Frequency 200/50kHz**: Provide optimal bottom and fish detection in both shallow and deep water. Each frequency can be displayed individually in full screen mode, or simultaneously in split screen mode.
- **A-Scope (Real-Time Display):** Split second real time representation of fish and bottom features passing through the beam of your transducer right now, the history of your A-Scope is represented in the standard sounder image scrolling across your screen.
- **Zoom Display:** Auto or manual zoom magnification of any part of the 200 or 50 kHz fishfinder screen image, (X 2, X4 or X6 magnification).
- **Bottom Lock:** The bottom lock feature, shows the bottom as a straight line, in order to help you detect fish close to the bottom and remove wave action from the fishfinder image.
- **Menu driven operation:** Easy to use with pop-up windows and clear screen instructions.
- **Full Screen or Split screen display:** All fishfinder display functions can be shown in full page screen mode, or split horizontally or vertically with other functions, such as chartplotter, waypoint 3D steering indicator, large character depth/temp/speed digit readout, etc.
- **White Line:** The White line feature helps distinguish between fish and the bottom, when fish are swimming close to the bottom.
- **Depth Temperature Graph:** Plots depth and temperature changes over time.
- **Waterproof (U.S.C.G. CFR-46 Standard):** Withstands 65 gallons (US) of water per minute sprayed through a 1" nozzle from 3.048m (10') for at least 5 min.

Plotter Features

- Seamless chart panning with lightning fast chart redraw
- SDGPS Satellite Differential GPS Compatible with the addition of the optional Raystar 120 SDGPS Antenna Sensor
- SmartRoute™ automatically builds waypoints and routes from previous tracks
- Waypoints and Routes can be stored on optional data cards
- Live cursor exchange between radar and chart
- Automatic screen synch between radar and chart
- CMAP NT cartography with port & tidal features
- Up to 1,000 Waypoints, Up to 20 routes with 50 waypoints each
- Choice of Orientation Modes Head Up, North Up (true or magnetic) & Course Up
- Intuitive Soft Key Prompts
- User configurable SeaTalk data boxes

Interface Features

- **HSB2:** Fully independent use of remote Chart data if present on hsb2. Full remote control and display of Radar and Sonar data if present on hsb2. Up to 10 hsb2 compatible devices can be connected together (RL Series only)
- **NMEA Input:** NMEA 0183 (GLL, GGA, GLC, GTD, VTG, BWC, BWR, RMA, RMB,RMC, XTE, VHW, HDG, HDM, HDT, DBT, DPT, APB,VLW, MWV,MTW,WPL, RTE and ZDA)
- **NMEA Output:** APB, BWC, BWR, DBT, DPT,GGA, GLL, MTW, RMA, RMB, RMC, RSD,TTM, VLW, VHW, VTG, WPL, ZDA.
- **PC Compatibility:** Full integration with RayTech software and optional hsb2 PC interface card
- **SeaTalk Input:** Depth, Speed Over Ground & Course Over Ground, Position, Waypoint number, range, bearing and time to go, Speed through water, Time, Cross Track Error, Heading, Wind, Date, Log/Trip, Pilot Status, Temperature, Man Overboard, and cursor position
- **SeaTalk Output:** Cursor data, Guard zone alarm and Navigational data bridged from NMEA

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SONAR AND SONAR/PLOTTERS

L755RC Plus Sonar/Plotter

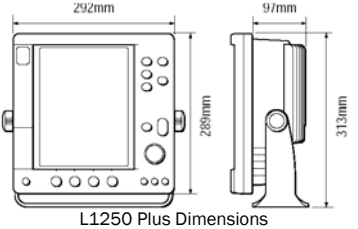
7" Monochrome display with hsb2 networking capability

L760 Plus Sonar and Sonar/Plotter

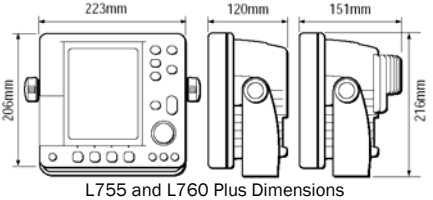
Daylight Viewable 7" colour display with hsb2 networking capability

L1260 Sonar and Sonar/Plotter

10.4" Daylight Viewable colour display. Dual Frequency 200/50 Khz with up to 1Kw output power.



L1250 Plus Dimensions



L755 and L760 Plus Dimensions

Sonar Transducer Options

Part #	Description
RAY#E66024	B256 4 Element High Performance 1kW Transducer
RAY#E66025	High Speed Fairing Block for B256
RAY#E66021	P65 Transom Mount Plastic 600W Depth Speed Temp Transducer (Included with RAY#E63009, RAY#E63011 and RAY#E63020)
RAY#E66020	B744V Thru-hull Bronze 600W Depth Speed Temp Transducer (Included with RAY#E63008, RAY#E63011 and RAY#E63012)
RAY#E66029	B744VL TH Bronze 600W Depth Speed Temp Transducer Long Stem
RAY#E66023	High Speed Fairing Block for B744V and B744VL
RAY#E66008	P79 Adjustable In-Hull Depth Transducer
RAY#E66013	P319 Plastic Low Profile 600W Depth Transducer
RAY#E66014	B117 Bronze Low Profile 600W Depth Transducer
RAY#E66015	SS555 Stainless Steel Low Profile 600W Depth Transducer
RAY#E66019	ST69 TM Plastic Speed/Temp Sensor with Y-Cable
RAY#E66018	B120 ST600 TH Bronze Speed/Temp Sensor with Y-Cable
RAY#E66030	P120 ST600 TH Plastic Speed/Temp Sensor with Y-Cable
RAY#E66009	3 Meter Transducer Extension Cable
RAY#E66010	5 Meter Transducer Extension Cable

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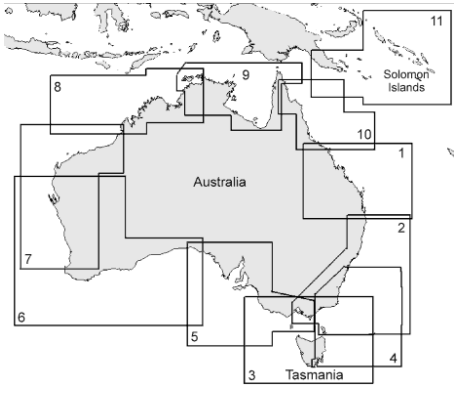
C-MAP CHART CARTRIDGES

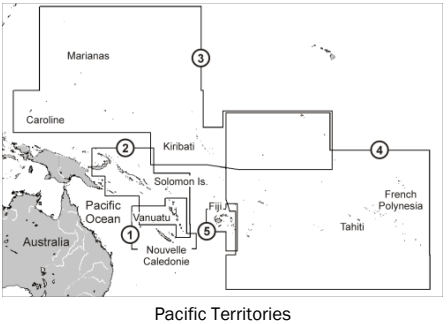
C-Map NT Charts

C-MAP Electronic Charts combined with a Chart Plotter / Global Positioning System (GPS) provide a powerful navigation aid to any mariner. All navigational data is sourced from official Government Charts ensuring the most up to date and accurate information

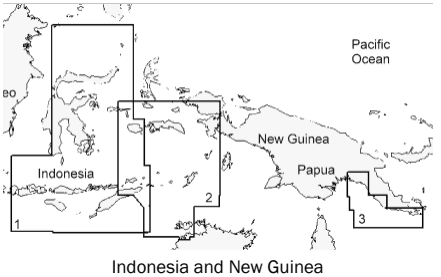
Use with all RayMarine plotter units except RayChart 425



Australia Wide Area Charts

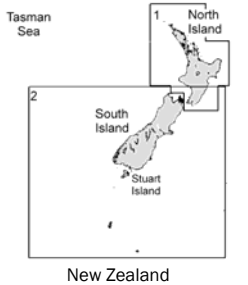


Pacific Territories



Indonesia and New Guinea

Part #	Description
Australia Super Wide Charts	
CMA#M-AU-C205	SOUTHPORT TO ADELAIDE including Tasmania
CMA#M-AU-C204	PERTH TO MELBOURNE
CMA#M-AU-C203	DARWIN TO BUSSELTON
CMA#M-AU-C202	BOWEN TO DARWIN
CMA#M-AU-C201	MELBOURNE TO THE WHITSUNDAYS
Australia Wide Area Charts	
CMA#M-AU-B027	TWEED HEADS TO WHITSUNDAYS (1)
CMA#M-AU-B028	MELBOURNE TO SOUTHPORT (2)
CMA#M-AU-B026	VICTORIA AND TASMANIA (3)
CMA#M-AU-B022	PORT JACKSON TO HOBART (4)
CMA#M-AU-B050	PORT EYRE TO MELBOURNE (5)
CMA#M-AU-B049	CARNARVON TO PORT EYRE (6)
CMA#M-AU-B048	BROOME TO BUSSELTON (7)
CMA#M-AU-B047	DARWIN TO BROOME (8)
CMA#M-AU-B046	SHELBURNE BAY TO DARWIN (9)
CMA#M-AU-B045	BOWEN TO SHELBURNE BAY (10)
CMA#M-AU-B065	PORT MORESBY TO SOLOMON ISLANDS (11)
New Zealand	
CMA#M-AU-B043	NEW ZEALAND NORTH ISLAND
CMA#M-AU-B044	NEW ZEALAND SOUTH ISLAND
Pacific Territories	
CMA#M-AU-C211	NEW CALEDONIA AND VANUATU ISLANDS (1)
CMA#M-AU-C210	SOLOMON AND VANUATU ISLANDS (2)
CMA#M-PC-C203	CAROLINAS, KIRIBATI, MARSHALL, MARIANAS (3)
CMA#M-PC-C202	TONGA SAMOA AND FRENCH POLYNESIA (4)
CMA#M-PC-C201	FIJI ISLANDS (5)
Indonesia and New Guinea	
CMA#M-AS-B017	EASTERN INDONESIA & EASTERN SULAWESI (1)
CMA#M-AU-B060	DARWIN TO AMBON (2)
CMA#M-AU-B040	PORT MORESBY (3)



New Zealand

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CABLES AND ACCESSORIES

SeaTalk Accessories

SeaTalk is the name given to the unique data interchange system, developed by Raytheon, and used exclusively throughout the product range. It is a single cable, three wire, asynchronous, bi-directional data communication system, which also carries sufficient power supply to operate other SeaTalk compatible instrumentation connected to it.

The flexibility of SeaTalk means that instrument systems can be customized completely to your specification and that there is always room for future expansion of the installation as and when required.

SeaTalk Cables

D244 Junction

PC to SeaTalk

Part #	Description
SeaTalk Cable Assemblies	
RAY#D284	Sea Talk 1M Cable
RAY#D285	Sea Talk 3M Cable
RAY#D286	Sea Talk 5M Cable
RAY#D287	Sea Talk 9M Cable
RAY#D288	Sea Talk 20M Cable
Miscellaneous Accessories	
RAY#D244	Sea Talk Junction Box
RAY#E25028	Sea Talk Interface Kit
RAY#M92677	Dual Station J-Box without cable
RAY#R55005	NMEA Out Cable Assembly – 1.5 metres
RAY#E85001	PC to Sea Talk Converter
RAY#R55006	Sea Talk Aux. Junction Box

HSB Accessories

HSB (High Speed Bus) cables are used for video transfer between Pathfinder HSB units. Please note that if you would also like to transfer SeaTalk data, you will need to connect the unit to the SeaTalk Bus with a Sea Talk cable.

A Splitter is required for each additional HSB device in a system greater than two.

Part #	Description
HSB Cable Assemblies	
RAY#E55004	HSB Cable – 10 metres
RAY#E55010	HSB Cable – 20 metres
Splitters	
RAY#E55040	HSB2 Splitter

Radar Cables

Standard Raytheon scanner and scanner extension cables for use with R/RL - 72/74 Radars.

Scanner Cable

Scanner Extension Cable

Part #	Description
Radar Cable Assemblies	
RAY#M92700	Pathfinder 10M Extension Cable
RAY#M92692	Pathfinder 10M Scanner Cable for 2KW
RAY#M92668	Pathfinder 15M Scanner Cable

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INSTRUMENT TRANSDUCERS

Speed/Log Transducers
The standard transducer combines a paddle-wheel log and temperature sensor. It is moulded from glass-filled polyester and provides an extremely linear output over a wide speed range. Low-speed sensitivity is excellent. Self-sealing feature provides a convenient, temporary seal while transducer is removed for cleaning. A bronze unit is available as an option for wooden hulls.

Depth Transducers
The standard transducer is supplied in moulded glass-filled polyester and is a rugged, thoroughly proven product. A bronze unit is available as an option for wooden hulls.

Wind Transducers
Standard Unit: This compact, lightweight masthead unit provides sensitivity and responsiveness in the lowest wind speeds, yet is rugged and accurate in the toughest sea conditions. Mounting is simple and 360o alignment is provided remotely, by electronic calibration at the instrument head. There is a long arm and short arm option.

Rotavecta: a unique wind measuring transducer whose simplicity provides easy installation and reliability.

Part #	Description
Speed Transducers	
RAY#M78712	Speed Lexan Transducer -Thru Hull, Removable
RAY#M78716	Speed Transducer -Bronze, Thru Hull, Removable
Depth Transducers	
RAY#M78713	Depth Lexan Transducer -Thru Hull, Low Profile
RAY#M78714	Depth Transducer -Bronze, Thru Hull Low Profile
RAY#M78717	Depth Transducer -Bronze TH Low Profile Removable
RAY#M78718	Depth Lexan Transducer, TH Low Profile Removable
Tri-ducers	
RAY#M78726	Tri-Ducer -Bronze, Thru Hull
RAY#M78917	Tri-Ducer Transom Mount
RAY#M78918	Tri-Ducer Bronze Thru Hull Long Stem
Wind Transducers	
RAY#D168	ST60 Std Wind Transducer only - no cable
RAY#E25019	ST60 Long Wind Transducer
RAY#Z195	Rotavecta Wind Transducer
RAY#E25018	ST60 Standard Masthead Transducer w/30 m cable

GPS RECEIVERS

Raystar 120 GPS Sensors
Raystar 120 SDGPS Receiver Compact and accurate the Raystar 120 WAAS compatible Satellite Differential Receiver provides pinpoint accuracy to Raymarine's family of Raycharts and Raychart compatible Radars and Sounders. A self contained waterproof GPS receiver and antenna combined, the Raystar 120 delivers accuracy better then 3 meters by decoding GPS correction signals from the WAAS (Wide Area Augmentation System) Note: WAAS not available in Australia.

Raynav 300
Compact SDGPS Navigator with built in receiver. Receives WAAS SDGPS signals for precision accuracy.

Part #	Description
RAY#E32035	SeaTalk Interface GPS Sensor
RAY#E32036	NMEA interface GPS Sensor
RAY#E32017	RayNav 300

GPS Sensor

RayNav 300

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ELECTRONICS

AUTOPILOTS

Why Chose an Inboard Autopilot?

Inboard pilots must be powerful enough to handle the loads on the steering system of larger boats. The drive unit of an inboard pilot is mounted below decks, linking directly with the boats steering system – all you see at the helm is the control unit. Raymarine offers a range of control units to suit your needs and style.

Selecting the Right pilot

An inboard pilot consists of a drive unit, corepack and your choice of control units. The first step is to specify the correct drive unit to match your boat's steering system, displacement and size. Next, select the appropriate corepack (T150 or T400, or G-Series 150G or 400G with AST and built-in rate gyro). Finally choose from ST7001, ST6001 or RP650 control unit.

For smaller vessels, the ST5000+ based systems are packaged to offer high value where the advanced features of core-pack based systems are not justified.

HYDRAULIC DRIVE PUMPS

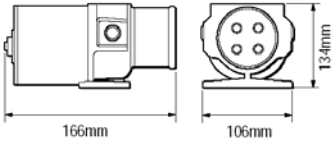
On-demand Drive Pumps

Part #	Volts	Capacity(cc)	CC/Minute	Bar
RAY#M81120	12	80-230	1000	50
RAY#M81119	24	80-230	1000	50

Note: Above units require 150 or 150G corepacks

RAY#M81121	12	230-350	2000	100
RAY#M81123	24	230-350	2000	100
RAY#M81122	12	350-500	2900	80
RAY#M81124	24	350-500	2900	80

Note: Above require either 400 or 400G corepacks

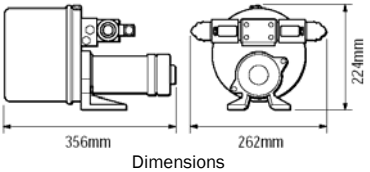


Dimensions

Constant Running Drive Pumps

Part #	Volts	Capacity(cc)	CC/Minute	Bar
RAY#M81125	12	350-500	3000	50
RAY#M81127	24	350-500	3000	50
RAY#M81126	12	500-1200	4500	50
RAY#M81128	24	500-1200	4500	50

Note: Above units require 400 or 400G corepacks



Dimensions

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ROTARY DRIVE UNITS

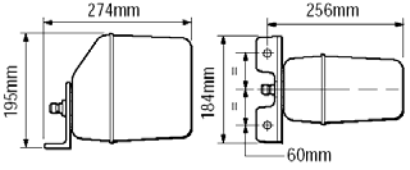
Rotary Drive Units

Part #	Volts	Torque(Nm)	Speed (rpm)
RAY#M81135	12	20	33

Note: Above units require 150 or 150G corepacks

RAY#M81136	12	34	33
RAY#M81137	24	34	33

Note: Above require either 400 or 400G corepacks



Dimensions

LINEAR DRIVE UNITS

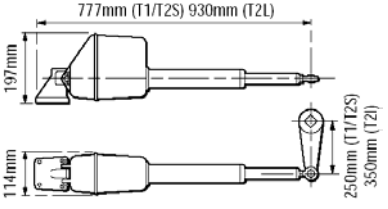
Type 1 and 2 Mechanical Linear

Part #	Volts	Thrust (KG)	HO Time	Stroke
RAY#M81130	12	295	11	300mm

Note: Above unit requires 150 or 150G corepacks

RAY#M81131	12	480	11	300mm
RAY#M81132	12	480	14	400mm
RAY#M81133	24	480	11	300mm
RAY#M81134	24	480	14	400mm

Note: Above units require either 400 or 400G corepacks

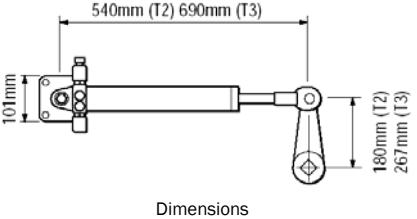


Dimensions

Type 2 and 3 Hydraulic Linear

Part #	Volts	Thrust (KG)	HO Time	Stroke
RAY#M81200	12	585	10	254mm
RAY#M81201	24	585	10	254mm
RAY#M81202	12	1200	12	300mm
RAY#M81203	24	1200	12	300mm

Note: Above units require either 400 or 400G corepacks



Dimensions

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COURSE COMPUTER CORE PACKS

T150/T400 and 150G/400G Core Packs

More powerful and rugged than ever before, Raymarine's new T150 and T400 course computers are also available with built-in rate gyro sensor, adding a new dimension in autopilot technology. With AST, AutoLearn* and FastTrim as well as high performance heading output, the new G-Series 150G and 400G offer the ultimate in autopilot performance.

ADVANCED STEERING TECHNOLOGY (AST)

Using highly advanced AST (Advanced Steering Technology) software and a built-in rate gyro transducer, the new 150G and 400G course computers maintain a razor sharp course, with smooth, crisp and controlled turns right onto your next heading.

With a Raymarine GPS to guide it, your inboard pilot will track straight to your next waypoint, making cross track error a thing of the past.

INTELLIGENT AUTOLEARN FUNCTION

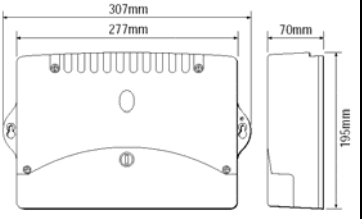
With the new ST6001 and ST7001 control units, AST and AutoLearn* software learns your boat's steering characteristics and automatically sets up your pilot for optimum performance.

FASTRIM AST corrects for any changes in standing helm required to keep the vessel on course (e.g. weather helm or loss of one engine), keeping you right on course when the going gets tough.

SENSITIVE RESPONSE AST allows you to retain complete control of how the pilot steers your boat to provide the most comfortable ride or conserve power on long sail passages.

MARPA AND RADAR/CHART OVERLAY G-Series course computers also provide accurate and stable heading data for MARPA and chart overlay functions on Raymarine's Pathfinder radars and chart-plotters.

Part #	Description
RAY#E12091	150G (12V) Corepack with RateGyro and AST
RAY#E12092	400G (12/24V) Corepack with Rate Gyro and AST
RAY#E12054	T150 (12V) Corepack
RAY#E12055	T400 (12/24V) Corepack



Corepack Dimensions

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CONTROL UNITS

ST6001 Plus
Compact Autohelm Series autopilot control head with AST and AutoLearn technology*

Part #
RAY#E12098

- Advanced AST software with integral rate gyro* for exceptional steering performance
- AutoLearn software* for easy set up
- SeaTalk and NMEA integration
- Displays current and locked heading, COG, SOG, BTW, DTW, TTG
- Repeats MOB and shallow water alarms from SeaTalk compatible devices
- Standard console or bulkhead mounting. Optional flush mount display head kit(Model Number E12100)
- Optional full function ST600R handheld remote control
- Optional full function second station using the ST6001 control head
- AutoSeastate with adjustable response levels, autotrim, autotack/turn
- Fast heading data* for MARPA and radar/chartplotter overlay

* When used with type G corepack

ST7001 Plus
Large screen Autohelm Series autopilot control head with AST and AutoLearn technology*

Part #
RAY#E12099

- Advanced AST software with integral rate gyro* for exceptional steering performance
- AutoLearn software* for easy set up
- SeaTalk and NMEA integration
- Displays current and locked heading, COG, SOG, BTW, DTW, TTG
- Repeats MOB and shallow water alarms from SeaTalk compatible devices
- Optional full function ST600R handheld remote control
- Multi-station capability. Simply connect additional control heads with SeaTalk cabling
- AutoSeastate with adjustable response levels, autotrim, autotack/turn
- Fast heading data* for MARPA and radar/chartplotter overlay
- Large display of rudder angle/course or cross track error
- Dedicated buttons for track mode, Response levels, resume and set course

* When used with type G corepack

ST600R Remote Control Head
Convenient full function hand held autopilot control

Part #
RAY#A12016

- Full function autopilot remote control and multi-function data repeater
- Compatible with any Raymarine pilot and SeaTalk instrument system
- "Chapter and page" menu system to find data fast with up to 21 selectable pages of information
- AutoSeastate with adjustable response levels, autotrim, autotack/turn

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AUTOPILOT SYSTEMS

ST5000+ Outboard Hydraulic
ST5000+ System for hydraulic steered outboard powered vessels with steering rams up to 10.5 cubic inches in size and up to 20,000 lbs overall vessel displacement.

Part #
RAY#A12011

- Hydraulic autopilot system for outboard powered vessels with steering rams up to 10.5 cubic inches in size and up to 20,000 lbs overall vessel displacement
- Large clear LCD display, with easy to use intuitive keypad
- SeaTalk and NMEA integration
- Displays current and locked heading, COG, SOG, BTW, DTW, TTG
- Repeats MOB and shallow water alarms from SeaTalk compatible devices
- Optional flush mount display head kit(Model Number A18025)
- Optional full function ST600R handheld remote control
- Optional full function second station using the ST6001 control head

ST5000+ Inboard Hydraulic
ST5000+ System for hydraulic steered inboard powered vessels with steering rams up to 10.5 cubic inches in size and up to 20,000 lbs overall vessel displacement.

Part #
RAY#A12010

- Hydraulic autopilot system for inboard powered vessels with steering rams up to 10.5 cubic inches in size and up to 20,000 lbs overall vessel displacement
- Large clear LCD display, with easy to use intuitive keypad
- SeaTalk and NMEA integration
- Displays current and locked heading, COG, SOG, BTW, DTW, TTG
- Repeats MOB and shallow water alarms from SeaTalk compatible devices
- Optional flush mount display head kit(Model Number A18025)
- Optional full function ST600R handheld remote control
- Optional full function second station using the ST6001 control head

ST5000+ w/Linear Drive
ST5000+ Sail Pilot system with linear drive. For sailing vessels up to 20,000lbs (9,000kg).

Part #
RAY#A12015

- Mechanical linear drive autopilot system. For sailing vessels up to 20,000lbs (9,000kg).
- Large clear LCD display, with easy to use intuitive keypad
- SeaTalk and NMEA integration
- Displays current and locked heading, COG, SOG, BTW, DTW, TTG
- Repeats MOB and shallow water alarms from SeaTalk compatible devices
- Optional flush mount display head kit(Model Number A18025)
- Optional full function ST600R handheld remote control
- Optional full function second station using the ST6001 control head

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COMMUNICATIONS

HF RADIOS, TUNERS AND ACCESSORIES

IC-M710 - Marine HF Transceiver

- AUS or USA Versions available.
- HF Transmit and 2182 kHz Alarm (IC-M710 Version 02)
- GMDSS Class II Version available
- USA Version 150 watts of power, 100% duty cycle
- AUS Version 135Watts of power, 100% duty cycle
- All modes, including RTTY
- SEA-mail ready. Optional filter may be required, depending on service provider.
- Receive 500 kHz - 29.9999 MHz 1136 channels
- Transmit: IC-M710 version 01: 1.6 MHz - 27.5 MHz marine channels 160 user programmable memory channels, each identified by either alpha characters, channel number or frequency
- 2182 kHz alarm (IC-M710 version 2 only)
- Multiple scanning modes
- Rugged metal chassis
- Direct keypad entry
- Large backlit alphanumeric
- LCD display with selectable lighting levels Large tactile knobs
- Automatic antenna tuner (option AT-130)
- Very affordable! About half the price of other SSB's
- 2 year warranty

Part #	Description
ICO#IC-M710AUS	Radio
ICO#IC-M710USA	Radio
ICO#FL100	Band Filter
ICO#IC-M710GMDSS	Radio
ICO#AT130	Automatic Tuner

IC-M710 HF Radio

GMDSS Version

Type 15S/R Series Whip Antenna

High performance for smaller and high speed vessels over 5.5m (18ft)and emergency removable antenna

- Overall length: 4.6m (15ft)
- Frequency range 2-30 MHz with ATU
- available unloaded or loaded to 1 frequency
- Power capability (PEP) unloaded-500w, loaded-300w;
- Emergency removable base mounted antenna for yachts/wire to masthead systems (type 15S/R) with backstay connection kit.

Part #	Description
MON#15S/Rw	Antenna
MON#HF-DINS	Feed Through
MON#EPLATE-C	Earth Plate

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VHF RADIOS AND ANTENNAS

IC-M502 - VHF Marine Transceiver

Easy waterproof operation... manually or by remote! The IC-M502, with its standard 4" X 6" front panel, will easily blend into your cabin console or dashboard. The generous front panel provides large function switches and a wide LCD. With full dot matrix characters, information can be easily read under any lighting condition. By adding the new, optional COMMANDMIC (HM-127) all available functions of the IC-M502 (except DSC operation) can be controlled from remote locations, such as from the deck or fly-bridge. Plus, the COMMANDMIC doubles as an intercom.

- New compact 4x6" flush mount design
- Optional fully integrated COMMANDMIC
- Submersible JIS-7 construction (minus connection cables)
- Three year warranty
- Built-in Digital Selective Calling (DSC)
- All International, USA* and Canadian* channels, plus weather channels* with alert function available. (* USA version only)
- Keypad and display backlighting with 8 adjustable levels
- Supplied Remote Function Mic for clear reception and transmission
- Convenient one-touch "TAG" scanning selection with simple add/delete
- Instant access to Ch 16 and Ch 9 (or Call channel)
- Optional UT-98 or UT-112 voice scramblers for communications privacy
- Up to 22 free channels are available (not available in all areas, ask your dealers for details)
- Available in black or white

Part #	Description
ICO#IC-M502	Radio (white)
ICO#IC-M502C	Radio (black
ICO#HM127	Mike(white)
ICO#HM127B	Mike(black)
ICO#OPC-999	Ext Cable
ICO#SP10	Ext Speaker
ICO#MB75	Flush Mount Kit

IC-M502 VHF

Command Mike

IC-M402 & IC-M402S VHF Transceivers

The IC-M402 incorporates the latest in user-convenient digital technology, is incredibly easy to see and operate, and is rated JIS-7 submersible. A large, newly designed LCD and speaker make the IC-M402 easy to see and hear, even in rough marine conditions

Large 2-digit Ch with scrolling channel names

Look at the size of the LCD with large letters and numbers! The large, easy to see display has 27 x 43 mm (1 1/16 x 1 5/8 in.) dimensions, so channel indications are maximized. 10-character channel names and all settings are displayed at the same time.

Easy to hear speaker

A newly designed large speaker grill improves the output of the front mounted speaker. The result is that the audio sounds even louder than the 4.5 (typical) output capability, even over wind or engine noise.

Built-in DSC capability that meets U.S.C.G. SC-101

The DSC watch function monitors Ch 70, while receiving another channel. It allows you to send a formatted distress message in an emergency. The position request function indicates a caller's position. Up to 30 DSC IDs are memorized.

Rugged waterproof construction

By spraying off any salt with fresh water after your outing, the IC-M402 is designed to work for many years. (Equivalent to JIS-7, submersible in up to 1 meter of water for up to 30 minutes; except cables.)

Command Mike Option (IC-M402 only)

Our COMMANDMIC™ makes it convenient for using the IC-M402 from a separate cabin or tower. It allows for remote control of all functions of the IC-M402 (except DSC operation). It offers its own large, easy to read LCD, is easy to hear and is also waterproof!

Part #	Description
ICO#IC-M402	Radio (white)
ICO#IC-M402C	Radio (black
ICO#IC-M402S	Radio (white)
ICO#IC-M402SC	Radio (black
ICO#HM127	Mike(white)
ICO#HM127B	Mike(black)
ICO#OPC-999	Ext Cable
ICO#SP10	Ext Speaker
ICO#MB69	Flush Mount Kit

IC-M402 VHF

Optional Command Mike (IC-M402 only)

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VHF RADIOS AND ANTENNAS

Ray 230E Modular VHF and Loud-Hailer System
The modular design of the RAY230E allows the receiver/transmitter to be mounted in an out of the way location, leaving just the waterproof mobile phone style handset and loudspeaker exposed on the dash. With options for handsets and speakers in up to three locations, the RAY230 VHF radio is always within easy reach.

The alphanumeric keypad and large display offer unparalleled ease of use, and the powerful loudspeaker provides superb audio quality, even when installed on the fly bridge.

- Submersible (JIS-7) telephone style handset with built-in display and alpha numeric keypad
- Loudspeaker with on/off switch and volume control provide superb audio quality
- Digital Selective Calling (DSC) SC101
- NOAA Weather Alert
- Optional Dual Or Triple Station Control (requires optional handset kit)
- Convenient intercom function between handsets
- Programmable Scanning
- Tri Watch: monitor channel 16 or 9, working channel and weather channel
- SeaTalk & NMEA input For DSC position/time/date
- Manual & Auto fog function (four siren modes)
- Built-in hailer function

Part #	Description
RAY#E43014	Includes base station transceiver, handset with cradle, powered loudspeaker and 10M handset ext cable
RAY#E46022	Second station handset kit (includes handset with cradle, powered loudspeaker and 10M handset ext cable)
RAY#M95435	Two-way hailer/horn speaker

Innovative Modular VHF Radio with Digital Selective Calling and options for Dual or Triple station control.

MDHB-2W VHF Antenna
VHF high band dipole for professional and pleasure craft

- Overall length: approx. 1.67m (5.5ft)
- Frequency range 146-180 MHz
- Pre-tuned to Marine Channel 16 156.8 MHz
- Power rating (CW) 80w; VSWR better than 1.2:1 at centre frequency
- Gain 2.2 dBi; Bandwidth 7.0 MHz at 1.5 SWR points;
- Base mounted

Part #	Description
MON#MDHB-2W	Antenna (white, base mount)

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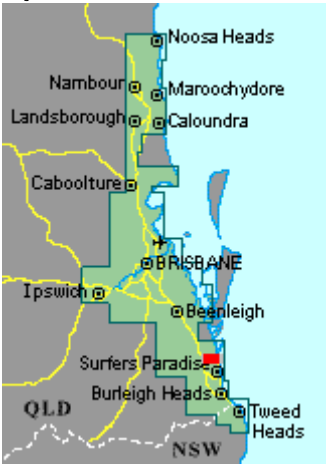
WHERE TO FIND US:

Labrador on the Gold Coast, South East Queensland



3/5 Ereton Drive, Labrador QLD 4215